

REMARKS

Applicants request favorable reconsideration and allowance of the subject application in view of the preceding amendments and the following remarks.

To place the application in better form, Applicants submit herewith a substitute specification, which includes a new abstract. For the Examiner's convenience, also provided is a marked-up copy of the original specification showing the portions thereof which are being changed. The substitute specification includes the same changes as are indicated in the marked-up copy. Applicants' undersigned attorney has reviewed the substitute specification and submits that the substitute specification contains no new matter.

Claims 1, 2, 4-8, 10-13 and 15 are presented for consideration. Claims 1 and 7 are independent. Claims 3, 9 and 14 have been canceled without prejudice or disclaimer. Claims 1, 2, 4-8, 10-13 and 15 have been amended to clarify features of the subject invention. Support for these changes can be found in the original application, as filed. Accordingly, no new matter has been added.

Applicants note that the Examiner has indicated his consideration of most of the art cited in the Information Disclosure Statement filed on April 13, 2004. Applicants also note, however, that the Examiner did not initial the form indicating his consideration of Japanese patent document numbers 9-45608, 2910327, and 3-157822 submitted with that Information Disclosure Statement. Accordingly, attached hereto is a PTO-1449 form, along with copies of the three listed Japanese documents. Applicants request, therefore, that the Examiner initial and return this copy of the PTO-1449 form, which lists these Japanese patent documents, indicating his consideration of those documents.

Applicants request favorable reconsideration and withdrawal of the objection and rejections set forth in the above-noted Office Action.

The drawings were objected to on formal grounds. Specifically, the Examiner asserted that various reference characters depicted in the drawings were not discussed in the specification, that various reference characters appearing only in FIG. 2 are discussed in the specification as being in FIG. 3, and that the “reticle 1” and “projection lens 1,” discussed in the specification as being in FIG. 1, must be illustrated in FIG. 1. To expedite prosecution, Applicants have amended the specification in the accompanying substitute specification in order to overcome the Examiner’s objections. Applicants submit that these changes overcome the Examiner’s objections. Such favorable indication is requested.

Turning now the art rejections, claims 1, 2, 4, 6-8, 10 and 12-15 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,081,614 to Yamada et al. in view of U.S. Patent No. 6,068,954 to David. Claims 3, 5, 9 and 11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the Yamada et al. patent in combination with the David patent as applied above to claim 1, and further in view of U.S. Patent No. 5,751,428 to Kataoka et al. Applicants submit that the cited art, whether taken individually or in combination, does not teach or suggest many features of the present invention, as previously recited in these claims. Therefore, these rejections are respectfully traversed. Nevertheless, Applicants submit that independent claims 1 and 7, for example, as presented, amplify the distinctions between the present invention and the cited art.

In one aspect of the present invention, independent claim 1 recites a method of measuring a position of a surface of an object while the object is scanned relative to a detection unit in a scanning direction in an X-Y plane. The detection unit is configured to detect the position of the

surface in a Z direction perpendicular to the X-Y plane. The method includes a detecting step of scanning the object relative to the detection unit in two scanning directions opposite to each other, and detecting, with respect to each of the two scanning directions, a position of the surface for the same detection point on the surface, a calculating step of calculating a correction value for correcting a position of the surface position to be detected by the detection unit, based on the positions of the surface detected with respect to the two scanning directions in the detecting step, and a correcting step of correcting the position of the surface detected by the detection unit while the object is scanned relative to the detection unit, in one of the two scanning directions, with the correction value obtained in the calculating step.

In another aspect of the present invention, independent claim 7 recites a measuring apparatus for measuring a position of a surface of an object while the object is scanned in a scanning direction in an X-Y plane. The apparatus includes a detecting unit configured to detect the position of the surface of the object in a Z direction perpendicular to the X-Y plane, a stage configured to scan the object relative to the detecting unit in the scanning direction, and a controller configured to cause the stage to scan the object relative to the detection unit in two scanning directions opposite to each other, to detect, with respect to each of the two scanning directions, a position of the surface for the same detection point on the surface, to calculate a correction value for correcting a position of the surface to be detected by the detecting unit while the object is scanned relative to the detecting unit in one of the two scanning directions, based on the positions of the surface detected for the same detection point with respect to the two scanning directions, and to correct the position of the surface detected by the detecting unit while the object is scanned relative to the detecting unit in the one of the two scanning directions, with the calculated correction value.

Applicants submits that the cited art does not teach or suggest such features of Applicants' present invention, as recited in independent claims 1 and 7.

The Yamada et al. patent relates to a surface position detecting method in which, while an object having a region with a pattern structure is scanned relative to a surface position detecting system in a scan direction, different from a surface position detecting direction of the surface position detecting system, the surface position detecting system performs surface position detection sequentially at a plurality of detection points, which are disposed within the region and along the scan direction. Applicants submit, however, that the Yamada et al. patent does not teach or suggest salient features of Applicants' present invention, as recited in independent claims 1 and 7, in which surface positions are detected with respect to two opposite scanning directions, and for the same detection point. Accordingly, the Yamada et al. patent likewise does not teach or suggest calculating the correction value in the manner of the present invention, as recited in independent claims 1 and 7. Applicants submit, therefore, that the Yamada et al. patent does not teach or suggest many features of Applicants' present invention, as recited in the independent claims.

Applicants further submit that the remaining art cited does not cure the deficiencies noted above with respect to the Yamada et al. patent.

The Examiner relies on the David patent for teaching a surface position measuring method that includes a second measuring step and a correcting step for a second object. The Examiner considers the Kataoka et al. patent to teach a surface position detection method and apparatus in which a plurality of directions are two opposite directions. Applicants submit, however, that neither the David patent nor the Kataoka et al. patent teaches or suggests position

detection in a scan system in the manner of the present invention recited in independent claims 1 and 7. Applicants submit, therefore, that these patents add nothing to the teachings of the Yamada et al. patent that would render obvious Applicants' present invention, as recited in independent claims 1 and 7.

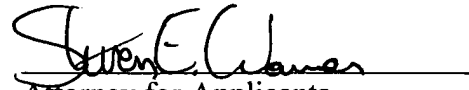
For the foregoing reasons, Applicants submit that the present invention, as recited in independent claims 1 and 7, is patentably defined over the cited art, whether that art is taken individually or in combination.

Dependent claims 2, 4-6, 8, 10-13 and 15 also should be deemed allowable, in their own right, for defining other patentable features of the present invention in addition to those recited in their respective independent claims. Further individual consideration of these dependent claims is requested.

Applicants submit that the instant application is in condition for allowance. Applicants request favorable reconsideration, withdrawal of the objection and rejections set forth in the above-noted Office Action and an early Notice of Allowance.

Applicants' undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should be directed to our address listed below.

Respectfully submitted,


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